SYMPATEX®
SUSTAINABILITY MANAGEMENT

April 2021

TABLE OF CONTENTS

1 GLOBAL CHALLENGES

Since the founding of Sympatex® about 30 years ago, the world population has grown by 50%. At the same time, humanity has increased the consumption of earthly resources to 1.5 times the regenerative capacity of our planet. Currently, we are using up the reserves of our children's generation - and leaving them with growing mountains of waste.

In fact, the World Economic Forum's 2020 study shows for the first time that five of the most probable risks with the greatest impact are of an ecological nature: the failure of climate protection, extreme weather conditions, natural disasters, the loss of biodiversity and man-made environmental disasters.

The "Sustainable Development Goals" (SDGs) adopted in the Paris Climate Convention in 2015 attempt to counteract these risks. They include 17 different topics relating to social and economic developments and the protection of our planet.

Sympatex® is particularly committed to the following development goals: SDG 5 "Gender equality", 6 "Clean water and sanitation", 8 "Decent work and economic growth", SDG 9 "Industry, innovation and infrastructure", SDG 12 "Sustainable consumption and production patterns", SDG 13 "Climate protection measures", SDG 14 "Life under water", 15 "Life on land" and SDG 17 "Partnerships to achieve the goals".

As a medium-sized company, Sympatex® is thus faced with both major challenges and opportunities. The company has committed itself to the topic of sustainability not only in order to be a reliable and attractive partner for clothing and footwear companies, but also to be a solution-finder for global challenges in the textile industry.

2 CHALLENGES OF THE TEXTILE INDUSTRY

As a manufacturer of 100% waterproof, windproof and optimally breathable membranes and laminates for footwear, workwear, sportswear, fashion and accessories, Sympatex® meets the most pressing challenges of the textile industry. These topics are listed below. The measures taken by Sympatex® are described in detail in the following chapters.

1. **REDUCTION OF CHEMICALS**
   Harmful substances endanger present and future generations and nature.
   → How do we minimize the use of chemicals and monitor compliance with strict pollutant limits reliable even in the deeper supply chain?

2. **WATER SAVINGS**
   The textile industry is very water intensive. Fibres also pollute rivers and seas.
   → How can we reduce the high water and energy consumption in the textile industry? How can we minimize or even prevent micro plastic?

3. **CO_2 REDUCTION**
   The textile industry is currently responsible for 8-10% of global CO_2 emissions. Current product prices do not reflect the real environmental costs. The failure of climate targets, water crises and social unrest will increase.
   → How can the textile industry reduce and compensate CO_2 emissions?

4. **RECYCLING**
   Clothing production has more than doubled since the year 2000 and with it the consumption of resources and the mountains of waste.
   → How do we jointly implement the closing of the loop?

5. **SOCIAL STANDARDS**
   Many companies pay workers a minimum wage, which is often insufficient to secure their livelihood. A life in human dignity is often not guaranteed.
   → How can Sympatex, as an SME, promote and ensure compliance with social standards along the textile supply chain?

6. **TRANSPARENCY**
   The supply chain is long and non-transparent. However, environmental protection measures and compliance with social standards can only be achieved through transparency.
   → What tools for more transparency are available and how can they be used?

3 CORPORATE GOAL

"Uncompromising transparency is the key to enabling the end customer to make informed purchasing decisions in the store," explains Dr. Rüdiger Fox, CEO Sympatex® Technologies. "By not only focusing on the high functionality of clothing in the future, but at the same time showing the ecological price tag with which purchases will burden the next generation, we can ensure that the industry sustainably protects what it values most: intact nature".

Dr. Rüdiger Fox, CEO

Sympatex® has set itself the goal of doing not only what is legally necessary, but also what is technically possible, in order to make its contribution to enabling the textile industry to close the ecological circle as quickly as possible. Through its own development work and close dialogue with its customers, Sympatex® wants to enable a clothing industry that combines high individual demands with uncompromising responsibility for future generations.

Sympatex® believes that this need not be a contradiction in terms. At the same time, it believes that it is not enough to simply optimise individual aspects such as durability. For Sympatex®, the highest degree of freedom is to voluntarily commit to pursuing a goal to the best of one's ability: "Closing the Loop". Sympatex® invites its customers to this common goal.

Dr. Rüdiger Fox, CEO Sympatex® Technologies

4 SUSTAINABILITY STRATEGY

Step by step towards more sustainability

The four ecological core factors **chemical reduction, recycling, CO_2 reduction** and **water conservation** determine our sustainable thinking, acting and our overall strategy. The aim of Sympatex® is to address the challenges in these core issues in a holistic way. Therefore, we have set ourselves ambitious targets in all key areas that we want to achieve by 2025 and 2030. Learn more about our targets in the short version of our sustainability report.
After all, perfect functional clothing does not require materials that are harmful to the environment or health. Follow our example, work with us or copy our ideas!

5 REDUCTION OF CHEMICALS

The global consequences of the resource-intensive textile industry are global warming, water shortage, over-fertilization and resource depletion. In addition, harmful substances endanger future generations and our nature.

For many years, Sympatex® has been intensively involved with the topic of pollutant management and has taken on a pioneering role in the sector of textile function specialists. As a supplier, Sympatex® can help companies to implement the use of harmless chemicals along the entire supply chain and to reduce water and energy consumption in the production process, materials and logistics.

5.1 OEKO-TEX® / REACH

Sympatex® Technologies is a founding member of the STANDARD 100 by OEKO-TEX® testing and certification system. Here, textile products are tested for possible harmful substances according to strict rules.

All Sympatex® components, i.e. membranes, laminates and tapes have always been tested annually. In this way, Sympatex® and its customers also comply with the European REACH legislation.

Sympatex® tests all membranes, laminates and tapes in accordance with STANDARD 100 by OEKO-TEX® Annex 4, and since 2017, the membrane and some laminates have even been tested in accordance with Annex 6. Appendix 6 contains the limit values according to the DETOX pollutant list drawn up by Greenpeace. The Sympatex® membrane has already been successfully certified in accordance with STANDARD 100 by OEKO-TEX® product class I appendix 6. In addition, some laminates have been certified according to STANDARD 100 by OEKO_TEX® Product Class II Appendix 6.

5.2 bluesign®

As a certified bluesign® system partner, Sympatex® fulfils the strictest guidelines in environmental protection, health and safety and stands for a production chain at a high and environmentally friendly level.

bluesign® also relies on the use of best-available technologies (BAT), which enables a reduction in energy and water consumption.

You can find current bluesign® Sympatex® laminates in the bluefinder®. For further information, your local Sympatex® Sales Manager will also be happy to help you.

5.3 ZDHC

ZDHC stands for 'Zero Discharge of Hazardous Chemicals' and means "No release of hazardous chemicals". The ZDHC aims to eliminate the discharge of hazardous chemicals into wastewater by 2020. In the meantime, the "Partnership for Sustainable Textiles" has adopted the ZDHC's list of hazardous substances. As a member of the partnership, Sympatex® has thus committed itself to monitoring the entire supply chain and implementing the standard with the help of the ZDHC's mRSL.

5.4 PFC-FREE

In order to meet the highest demands on functionality and care, the outer fabrics of outdoor clothing are in most cases water-repellent on the outside (impregnated) and processed with a membrane on the inside. The Sympatex® membrane used ensures that the functional clothing is waterproof.
Water-repellent finishes also provide lasting hydrophobicity of the textiles. A durable water repellent (DWR) finish is a wafer-thin coating of the individual fibres which ensures that water is repelled. This finish prevents or delays the penetration of water into the outer material. The result: the garment does not soak up water, a clammy body sensation is eliminated, and breathability is maintained at a high level. DWR technologies and their performance can basically be divided into two groups: Fluorocarbon-containing PWRs (PFC) and fluorocarbon-free PWRs.

PFC (per- and polyfluorinated chemicals / fluorine compounds) are used in the textile finishing of outdoor clothing and footwear and guarantee water, dirt and oil repellent functionality. However, these fluoroorganic compounds are classified as ecologically questionable. The high stability of the carbon-fluorine compound results in resistance to numerous degradation mechanisms. As a result, PFCs once released into the environment remain there for a long time. Waxes, paraffins, polyurethanes, dendrimers or silicones, can alternatively replace fluorocarbon-containing finishes. In an independent test procedure initiated by Greenpeace, functional alternatives to products containing fluorine were tested. This showed that water beads up comparably well with fluorine-free products.
That is why an EU consultation phase on the restriction procedure for C6 finishes is currently underway. Implementation will take place in 2021 with an 18-month transition period.

The Sympatex® membrane is PTFE-free and PFC-free, i.e. it contains no fluorine compounds. It consists of polyether ester, a chain of polyester and polyether molecules that is harmless to health, and is therefore environmentally and skin-friendly and recyclable like a PET bottle.

Other membranes such as Gore-Tex or eVent are made of PTFE (polytetrafluoroethylene), the production, dumping, excessive heating and combustion of which can release PFCs that are considered ecological and health hazards.

For example, traceable quantities of hydrofluoric and hydrochloric acid are released during the incineration of clothing containing PTFEs. Although the industry does not deny this, it hides behind the claim that modern incinerators prevent these substances from being released into the environment. Given the export of waste and textiles to third world and developing countries, this is only a theoretical, self-serving claim, which in reality only occurs in special cases.

The performance of fluorine-free polyester membranes and PTFE-based membranes is comparable in terms of windproofness, breathability and waterproofing at a high level.

Since mid-2008, Sympatex®, together with its partner Rudolf Chemie, has offered Bionic Finish® Eco, an environmentally friendly, fluorocarbon-free DWR finish for textiles. In 2008, Sympatex® was the first functional specialist to produce functional clothing completely without fluorocarbon-containing components.

Since 2012, Greenpeace has repeatedly tested waterproof and water-repellent outdoor products for their pollutant content as part of its "Detox" campaign. The tests included two products made from Sympatex® materials. Both times, Sympatex® products emerged as test winners.

In order to maintain this pioneering role, Sympatex® regularly reviews all fluorocarbon-free technologies available on the market to ensure the best available technology for its customers and the environment.

TARGET C

FOR ECO-FRIENDLY DWR TREATMENTS

6 WATER SAVINGS

We are also working hard to reduce our (traditionally low) water footprint to a minimum and to eliminate industrial processes that contribute to the pollution of this resource. We also support the use of water-saving technologies by our suppliers.

6.1 SPIN DYING

According to a World Bank estimate, the dyeing processes of the textile industry are responsible for around 20% of the world's industrial water pollution. In 2018, we introduced a new line of spinneret-dyed laminates. The new dyeing technology proves that performance and sustainability are in perfect harmony. How does it work? In the environmentally friendly dyeing process, the colour pigments are added to the fibre during spinning. A process that saves up to 75% water and up to 90% chemicals compared to conventional dyeing of the finished fabric.

6.2 MICRO PLASTICS

The washing of synthetic textiles is responsible for about one third of the release of micro plastics into the environment. Therefore, together with partners such as the Plastic Leak Project, we have tried to find out, which approaches can lead to a minimization of microfiber quantities in the washing process with the washing machine and the entire life cycle. The result: the lamination process already leads to a reduction of around 50% in the amount of outgoing micro plastic particles compared to a non-laminated textile fabric. A further study, in which we participated under the leadership of Quantis, shows that the significantly larger amount of micro plastic input into the water bodies is caused by the improper disposal of textiles. We want to prevent this by making the waste valuable again as a raw material. Further projects to minimize the risk of plastics are underway and are immediately incorporated into our product development.

7 CO_2-REDUCTION

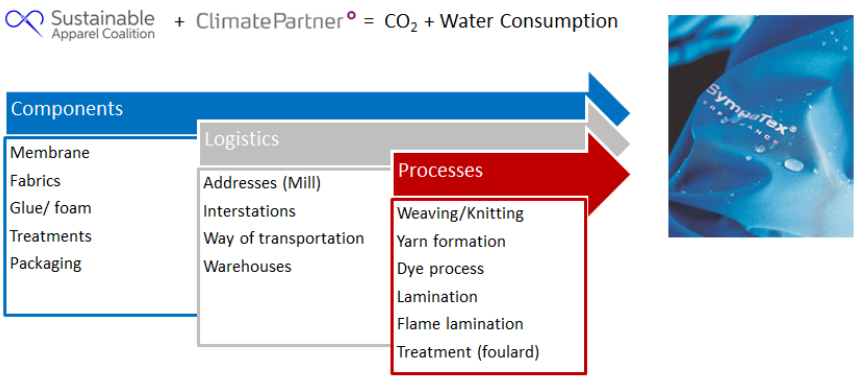
Sympatex® is in regular contact with its supply chain, from textile manufacturers to dyeing plants, printers, equipment suppliers and adhesive manufacturers. Thanks to this transparency, Sympatex® is able to optimise its supply chain, calculate the water and CO_2 consumption of all products and create a complete traceability and possibility of CO_2 compensation for customers and end users.

As a member of the Sustainable Apparel Coalition (SAC), Sympatex® uses various SAC modules to measure sustainability throughout the entire supply chain. One of these modules is the Material Sustainability Index (MSI). It is used to measure environmental impacts such as greenhouse gases, water use, eutrophication and resource consumption. Sympatex® can use this tool to measure the CO_2 and water consumption of all laminate components.

Together with the company ClimatePartner®, an IT tool has been developed that can calculate the environmental impact of Sympatex® products, including logistics and processes, using the SAC database.

This enables Sympatex® to support its customers in reducing their environmental impact to an unavoidable minimum. With the help of the Sympatex® eco-calculator, the ecological footprint and water consumption of every single running metre can be measured and additionally offset by supporting climate offset projects. The data can also be used as a decision-making aid when developing products.

Sympatex® considers the entire process chain (materials, processes and logistics) from the extraction of raw materials to delivery to the customer.

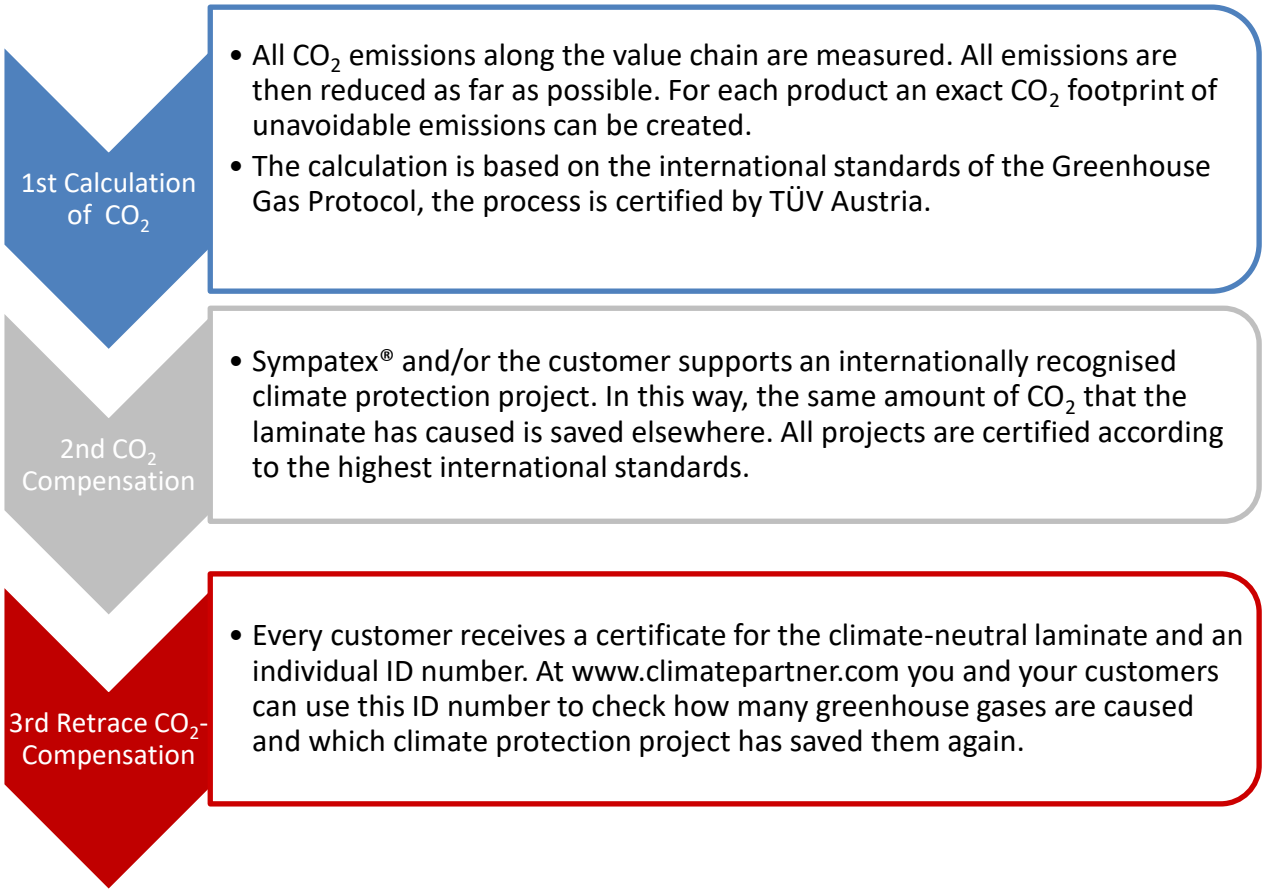


7.1 CLIMATE NEUTRALITY

Climate change is the greatest challenge of the 21st century. Individual companies must also make their contribution. The purchase of climate-neutral membranes and laminates offers customers the opportunity to become active in climate protection quickly and easily.

With climate-neutral membranes and laminates, the greenhouse gas emissions caused by the manufacturing process are calculated, which allows the identification of the biggest emission drivers and reduction potentials. By investing in internationally recognised climate protection projects, the unavoidable CO_2 emissions can then be offset, thus making the products climate-neutral.

HOW DOES CLIMATE NEUTRALITY WORK?



ClimatePartner® calculates the CO_2 consumption of clothing and shoes free of charge for Sympatex® customers, so that they can be made completely climate-neutral.

OVERVIEW CLIMATE OFFSET SERVICES

Marketing material	Description	Graphic
ClimatePartner® Logo	ClimatePartner stands for transparency and credibility in climate protection. In order to inform our customers about our cooperation with ClimatePartner as a competent partner for climate-neutral products, we are happy to provide you with the ClimatePartner company logo.	ClimatePartner°
Label with individual ID number and QR code	By printing an identification label with an individual ID number, the production of climate-neutral products can be fully traced by the customer. By entering the ID number on www.climatepartner.com or scanning the QR code, information on the amount of CO_2 and the climate protection project supported for offsetting can be called up. These labels are available in various languages.	ClimatePartner° klimaneutral Produkt | ID 00000-0000-0000
Use of the graphic climate neutrality	All CO_2 emissions caused by the production are calculated first. These CO_2 emissions are offset by supporting recognized climate protection projects that effectively reduce CO_2 emissions.	CO_2
ID-link	We provide you with the HTML code of the ClimatePartner® ID query window. With this HTML code you can integrate the input field of the ID number of climate neutral products into your homepage. The ID numbers can then be queried via this field. In this way, the service of climate-neutral products becomes traceable for you and your customers.	
Pictures of climate offset projects	Image material of the current climate protection project Wind Energy, Taibus Banner, China can be found here.	www.climate-project.com/1025
Climate-neutral certificate	Customers receive a certificate of climate compensation	Example see Sympatex certificate attachment

ClimatePartner

Certificate

Partner in Climate Protection

SympaTex®

Climate Neutral Sympatex Membrane 2020

This certificate confirms the offset of carbon emissions by additional carbon offset projects.

Supported offset project
Forest Protection
Kasigau Wildlife Corridor
Kenya

ClimatePartner-ID
11937-1612-1002

Issued on
10.02.2020

Use the following URL for more information about the offset and the supported carbon offset project:

climatepartner.com/11937-1612-1002

ClimatePartner

Certificate

Partner in Climate Protection

SympaTex®

Climate Neutral Sympatex Membrane
2017 - 2020

This certificate confirms the offset of carbon emissions by additional carbon offset projects.

Supported offset project
Forest Protection
Kasigau Wildlife Corridor
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Issued on
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7.2 UNFCCC – FASHION INDUSTRY CHARTER FOR CLIMATE ACTION

The textile industry is responsible for 8-10% of total CO_2 emissions worldwide (more than all shipping and aviation combined or about the same as the EU as a whole). 83% CO_2 is produced by the clothing industry and 17% by the footwear industry. By 2030, this amount will double if we do not change anything.

On 10 December 2018, the UN has launched the "Fashion Industry Charter for Climate Action" at the COP24 World Climate Conference in Poland. It comprises a list of minimum targets agreed upon by representatives of a number of major clothing brands under the leadership of the UN in order to curb the climate impacts caused by this industry.

As the first signatory to the UN Fashion Industry Charter for Climate Action, we have committed ourselves to continuously curb the emission of climate-damaging greenhouse gases along the entire textile supply chain and to become completely climate-neutral latest by 2050.

Picture: Dr. Rüdiger Fox, CEO Sympatex Technologies GmbH, presents the first climate-neutral functional jacket at the UN Climate Conference in Katowice 2018 as the first signatory of the Fashion Industry Charter for Climate Action of the UNFCCC.

8 RECYCLING

According to SDG 12 "Responsible consumption and production patterns", addresses the issue of recycling, the volume of waste must be significantly reduced by 2030 through avoidance, reduction, recycling and reuse. However, current figures from the textile industry show that clothing production has doubled between 2000 and 2014. Accordingly, the consumption of resources has risen rapidly. At the same time, waste production is increasing steadily.

Sympatex®, as a supplier of membranes, laminates and garments, is therefore working intensively on the topics of recycling and resource efficiency and offers recycling solutions on all three possible levels, i.e. membrane, laminate and garment.

Our goal is use less new resources and create less waste - through textile recycling and using recyclable materials.

Our core product, a polyester ether membrane, PTFE-free and PFC-free and produced in the EU offers the best conditions. It enables the sorting of highly functional, recyclable components.

The lamination of the Sympatex® membrane with polyester face and lining fabrics results in mono-material polyester laminates.

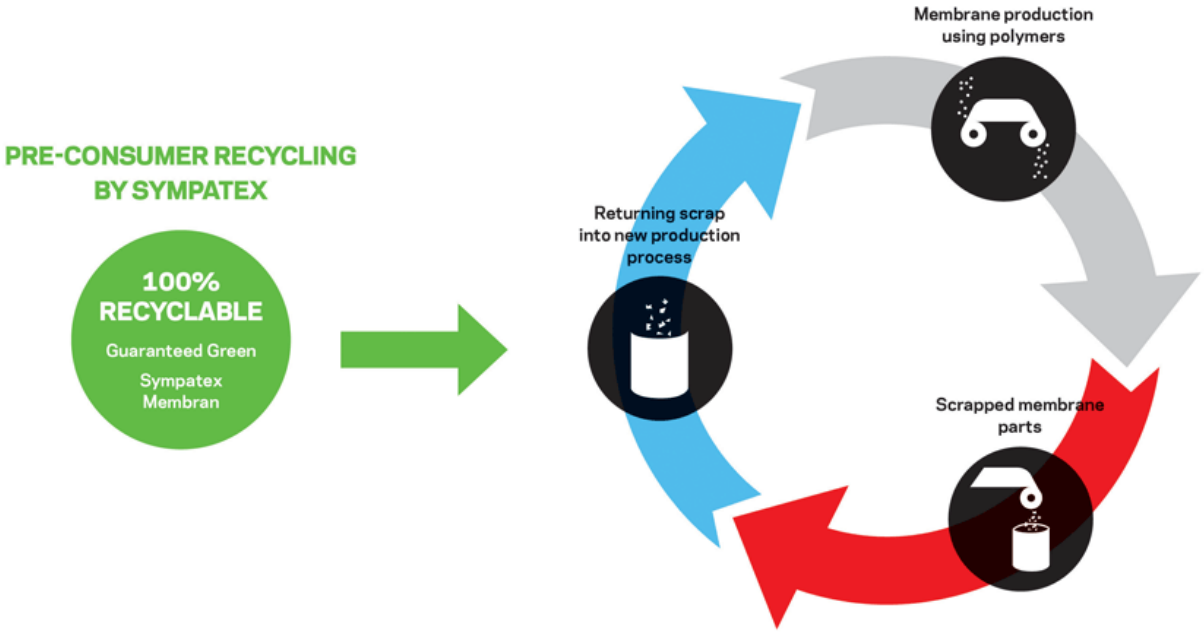
Sympatex® is already involved in various R&D projects to create the closed loop.

8.1 SYMPATEX MEMBRANE – PRE-CONSUMER RECYCLING

The Sympatex® membrane consists of ecologically harmless polyether ester and therefore can be recycled following standard methods – just like PET bottles.

Regarding the production of the membrane, Sympatex and its partners have developed a procedure for the first time that helps to reduce the material input quantities by up to 15%. By a mono-material recycling of waste membrane particles from production, important material and energy savings are generated.

During the development of this procedure, Sympatex managed to guarantee the product properties of the highly functional membrane at the same level without any loss of quality. The pre-consumer recycling procedure has been used since the beginning of 2011 for a selection of Sympatex membrane qualities and represents an important step towards an improvement of the eco-balance.

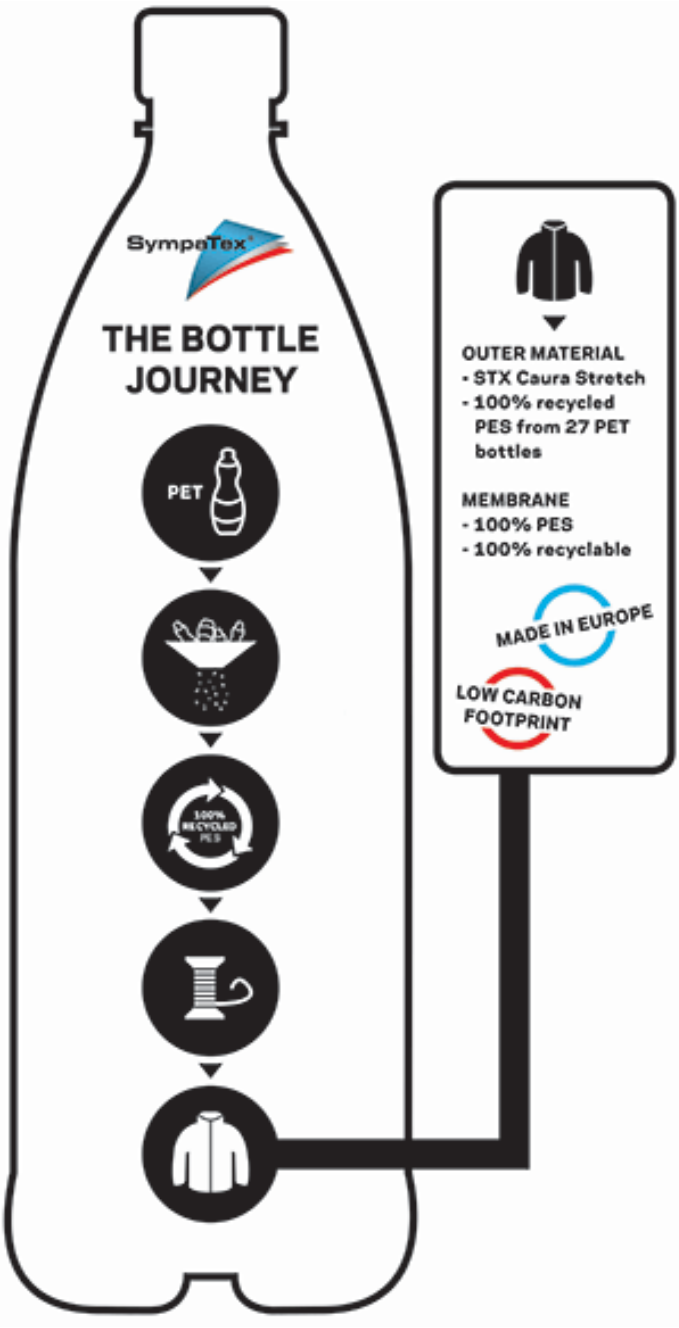


8.2 RECYCLED AND RECYCABLE LAMINATES

The lamination of the Sympatex membrane with PES outer materials and linings results in mono-material polyester laminates. This material combination is the ideal precondition for a direct recycling process using existing technologies.

Up until now, the polyester fabrics are mainly made of recycled PET bottles. But now we go even further: The 100% recycled functional Sympatex laminate is the combination of the 100% recycled Sympatex membrane and 100% recycled PES lining or outer fabric. This is where the Sympatex recycling loop closes.

For the outer material of a standard Sympatex men's jacket, for instance, 27 PET bottles (0.5 liters) are recycled and thus reused. The outer materials that are made of recycled yarns represent up to 90% of a final Sympatex laminate product. Due to the 100% recyclable PES membrane, Sympatex laminates are a 100% recyclable product. The performance of recycled and non-recycled PES materials is comparable at a high level.



8.3 GARMENT RECYCLING – CLOSE THE LOOP

As a logical consequence and important next step, Sympatex® is striving to recycle the recyclable membranes and laminates that are processed in the garment, thus creating a closed loop. Sympatex®'s aim is to return the single-variety garments to the recycling process in such a way that high-quality granulate is created and the product is "upcycled".

As early as 1996, Sympatex® developed a patent to support the product development of a single-variety garment in order to provide the highest possible quality of single-variety raw material for the subsequent recycling process. This patent "Completely recyclable jacket made of synthetic polymer material" (formerly Akzo Nobel) is available for download at www.sympatex.com. A short time later, the first attempt was made together with industrial partners to retrieve recyclable jackets from end consumers. In May 2017 Sympatex® presented the wear2wear™ concept together with various European industrial partners. This is the first fully recycled and 100% recyclable PES garment in the functional textile sector.

Find more information on our close the loop journey and achievements below.

8.3.1 RECYCLING STRATEGIES FOR PES FIBRE2FIBRE UPCYCLING

wear2wear™

The wear2wear™ concept, founded in 2017, is an innovative industry partnership for high quality and sustainable clothing. The open partnership of competent partners in Europe is willing to cover the future of the recycling cycle and close it in the long term. The sustainable wear2wear™ Concept is synonymous with high quality, as well as responsible clothing. State-of-the-art industrial plants and technologies in Europe are integrated, to guarantee the recycling of textile fibers to produce new functional textiles. The aim of the concept is to

recycle all raw material and make recycled textile fibers fully recyclable again at the end of their life cycle, to minimize the generation of waste products and conserve resources. wear2wear™ guarantees that within the cycle, complete information about the quality of materials until the finished product will be provided. Furthermore, new products out of the wear2wear™ cycle consist out of 100% recyclable functional materials.
The five European founding companies of the wear2wear™ cooperation already cover a large part of the recycling cycle.
https://www.wear2wear.org/de/

DEMETO© - DE-POLYMERIZATION BY MICROWAVE TECHNOLOGY

The European research project DEMETO© is developing a new method to gain recycled PET material out of chemical recycling.
The procedure of a chemical De-polymerization and End- polymerization of PET is due to the microwave radiation intensification process and will be simulated in an industrial scale. At present time, waste streams are based on polyethylene terephthalate (PET) and will be handled by mechanical procedures.
The DEMETO© process allows unlimited lifetimes for PET “waste” without compromising recycled raw materials and to achieve recycled PET materials. The industrialized technology enables the creation of a new source of raw material for the plastics market and stands as a Cradle2Cradle approach for a circular economy.
The European project is financed by the European Research and Innovation Program Horizon 2020© and builds on a partnership of 13 actors, who share the common vision of a more sustainable world. At the interface between the chemical and textile industries, the project serves as one of the forward-looking recycling strategies for the textile recycling and is supported by industrial partners, such as H&M.
https://www.demeto.eu/

WORN AGAIN TECHNOLOGIES

Worn Again Technologies, founded in 2005, is a start-up in England, which offers a solution for the removal of textile waste.
Initially, the company focused on the production of recycled footwear. By the growing demand and public interest, the company develops far-reaching solutions to solve the challenges of textile waste, by designing a solution for the development of a circular recycling technology for textile and clothing industry. Through the development of a chemical recycling process, which is able to separate pure and mixed polyester and cotton textiles, the process closed an enormous gap in the circular economy development.
Besides pure equivalent polyester terephthalic acid also cellulose pulp will be generated, which can be used for the production of lyocell or viscose. Furthermore, the process allows

20% of foreign material, which can be absorbed and filtered out and serve the high majority of wearable textile blends in the near future.

Sympatex supports this ground-breaking polymer recycling technology, created by a collaboration of scientists, chemical engineers and strategic partners. The first pilot plant will open in 2020.

http://wornagain.co.uk/

RESYNTEX©

The research project RESYNTEX©, which was launched in June 2015, includes the development and conception of a new circular economy, within synergies between the textile industry with the chemical industry. Using industrial symbiosis, secondary raw materials can be transferred into sustainable textile waste. The aim of the project is to develop a complete value chain for textile waste as recycled raw material for the production of new raw materials for the chemical and textile industries.

An outcome of the research project are innovative business models for the chemical and textile industries.

During the chemical decolorization and hydrolysis processes for all kind of materials (PET, PA, PU, CO, VIS) are integrated in the pilot plant in Maribor, Slovenia.

Besides pure textile waste, also material mixtures, e.g. of Cellulose PET, PA-PET, as well as wool-PET, can be returned to their original raw material structure, to provide raw materials for circular textile circulatory systems.

RESYNTEX® received € 8.7 million in funding from European research and development Innovation Program Horizon 2020© and will complete the first pilot phase after 42 months in May 2020.

The second phase of the Resyntex project will start in 2021 and continue the technology improvements of the chemical textile recycling.

http://www.resyntex.eu/

8.3.2 THEORETICAL SCENARIO FOR UPSCALING THE WEAR2WEAR™ PROCESS

In order to upscale the wear2wear pilot project, the integration of feedstock into the wear2wear loop concept is paramount. In addition to different amounts of textiles, different locations for collecting and customer needs, wear2wear™ can offer customized solutions for pick up systems, dismantling and industrial washing processes.

Theoretical options for feedstock integration, based on used corporate jackets from authorities, are listed below:

- setting up containers for collecting of replaceable PES based jackets
- collecting of used jackets by customer´s employees
- pick up services from used jackets at different locations on demand
- transferring to industrial washing partners for cleaning and preparation of upcycling processes (optional fees)
- transferring to dismantling partner for separation of extraneous material and non-recyclable component
- reselling separate materials to upcycling partners
- PES based materials send to wear2wearTM upcycling partners for shredding and chemical or/and mechanical recycling, depending on contamination grade based on application area, finishing and dying
- considering best upcycling processes for economic and ecological solution
- upcycling processes and production of recycled granulate
- reselling granulate to Fiber and Yarn producers
- spinning of new fibers or filaments
- reselling to Fabric and membrane suppliers
- production of new fabrics or laminates
- reselling fabrics or laminates to manufacturer or clothing suppliers
- manufacturing of new clothing
- reselling to customers (receiving discounts for fibre2fibre products by integrating feedstock for wear2wear™ textile loop)

8.3.3 DESIGN2RECYCLE

In order to close the loop, new design concepts and existing collections should follow a Design2Recycle strategy. Design2Recycle© is an ongoing process and needs to be regularly updated. According to different using purposes, there are different categories to achieve total circularity. Every collection needs to be carefully rethought and customized on brand and customer requirements, as well as suitable for requirements of current recycling methods.

Aspects for design, material and fabrics

- Using of mono material trims and fabrics, e.g. Sympatex® laminates
- Keep clean design, reduce style aspects to necessary level and consistently implement material with recyclable characters, to create suitable product for current recycling methods
- Mono material character is highest priority for recycling
- Yarn reduced design, especially for sleeves, collar, hood and chest parts
- Reducing of reflective material: piping, logos, ribbons = concentrate reflective on single fabric parts, to avoid all over material loss
- Change of water-resistant fabric construction, to avoid water repellent zippers
- If there is no PES based trim, change to metal alternative, to keep recycling possible without high costs and time- consuming
- Reduce logo designs and concentrate on fabric (no PES based print options available
- Integrate trims, which are free from harmful chemicals, to do not disrupt afterlife upcycling
- Integrate high quality products, to provide raw materials for future rec. products
- Change from high performance style to sustainably suitable and necessary design constructions

Highest goal of achievements

- Only use mono material trims and fabrics, which are already made out of rec. raw materials

Logistic aspects

- Use carbon reduced transports and logistic services
- Avoid plastic for packaging, or reuse packaging material
- Reduce packaging in general

sympatex®
we are
the first
generation,

PRESS RELEASE

World premier during 2020 ISPO: Sympatex Technologies and Schoeller Textil introduce the first circular functional jacket made from used textiles

rEvolution Hybrid, the latest product from the wear2wear™ European industry partnership, was presented to the public for the first time during today's press conference

Munich, January 28, 2020 – **rEvolution Hybrid** generated a lot of buzz on day three of the 2020 ISPO in Munich. The world's first upcycled functional jacket made from 30 percent recycled used textiles and 70 percent recycled PET bottles is the latest development from **wear2wear™**. The three-layer, high-performance jacket was developed and produced in collaboration with the European industry partnership, which meanwhile has grown to nine core members and three technology partners with the aim of rapidly closing the textile loop. This outdoor jacket offers not only maximum wearing comfort, but also EN 343-certified rain protection. Inspection of the sustainable and skin-friendly rEvolution Hybrid jacket is carried out by OEKO-TEX® und bluesign® in line with the stringent STANDARD 110. Two of the wear2wear™ founding members - Sympatex Technologies and Schoeller Textil – will have the jacket on display at their respective exhibit booths (hall 1, booth 300 / hall A1, booth 218).

rEvolution Hybrid: born from used textiles

The manufacturing process for the rEvolution Hybrid jacket begins by mechanically reducing used, 100 percent polyester (PES) textiles into fibers and converting them into granulate using an additional polymer melting process. The granulate is subsequently melted again and spun into new PES filament yarn. The yarns are then processed into textile polyester fabrics by Schoeller Textil AG and laminated together with the 100 percent recyclable polyetherester-based Sympatex membrane to create an unmixed, highly-functional and 100 percent waterproof functional textile that can be recycled again. The rEvolution Hybrid manufacturing process currently relies on 30 percent recycled used textiles. The remaining 70 percent is derived from PES yarns produced from recycled PET bottles. By using chemical upcycling processes, other substances such as PU adhesives can also be dissolved into a spinnable concentration so that they gradually vanish from the recycled textiles. The goal is to increase the percentage of recycled used textiles to 100 percent within the coming months.

Design2Recycle – the underlying concept of rEvolution Hybrid is unmixed materials

The Design2Recycle concept that was developed for the rEvolution Hybrid is based on a selection of low-seam cuts of materials that are as pure-grade as possible, in combination with

unmixed ingredients and environmentally-compatible equipment and dyes that do not affect the recycling process.

"The de facto proportion of polyester materials within the entire textile industry already exceeds 50 percent. If you limit this to synthetic materials – still two-thirds of our industry – it even increases to 80 percent. It should be obvious that we have to try make it a priority to manufacture apparel from pure polyester materials, so that once the clothing is used, it can be recycled using a process that is easy to implement and cost-effective," explains Dr. Rüdiger Fox. "In other words, the hurdles involved in implementing a textile loop are much lower than generally assumed. The only thing holding back the creation of a waste-free synthetic clothing industry is the limits of our imagination – the collective will to make it happen as soon as possible," says Fox.

End of life – rEvolution Hybrid returns to the wear2wear™ loop

Using an integrated RFID chip, all wear2wear™ products, including the rEvolution Hybrid, are traceable and transparent for the consumer and the process partner. TEXAID, the new wear2wear™ partner, can determine if a clothing article belongs to the concept by reading the RFID chip. And partners such as CWS ensure the collection of used clothing from the rental business and the protective work clothing segment. Once the clothing has been collected, sorted and separated, it then finds its way to wear2wear™ partner Carl Weiske, which re-initiates the upcycling process through a special combination of mechanical and chemical methods. Using a water-soluble PVA (polyvinyl alcohol) yarn in the Design2Recycle process, non-recyclable residues can be cost-effectively removed without impacting the material. The yarn, which withstands the daily wear and wash cycle typical for outdoor and protective work clothing, first begins to dissolve at 100°C. After the raw materials are reprocessed, new PES filament yarn is created, which is then processed into new upcycled polyester fabrics. The wear2wear™ loop is closed and a new high-quality, sustainable functional textile can be created.

"The wear2wear™ collaboration is not about waiting until there is an optimal solution. The partners are continually improving the state of the technology together and constantly enhancing their capabilities. As a result we are assuming responsibility for making the world of textiles more sustainable, day-by-day and step-by-step. Perhaps you could describe us as realistic idealists," says Hendrikus van Es, head of BU Protection Textiles and member of the executive board at Schoeller Textil. "This is something that would nevertheless be impossible on our own. The only way to show how the entire textile loop works and ensure that clothing is responsibly manufactured and then recycled after it is used, is through partnerships and transparency," adds van Es.

8.4 CARE AND REPAIR

The Sympatex membrane functions according to a purely chemical-physical principle: the hydrophilic components of the Sympatex membrane absorb moisture from the body and release it to the outside through evaporation. At the same time, the non-porous structure of the membrane prevents rain from penetrating. This makes clothing with Sympatex features extremely easy-care. Because the Sympatex membrane, unlike porous membranes (Gore-Tex, eVent), cannot become clogged with sweat (salt crystals) or dirt, you do not have to wash the garments after each use to maintain the functionality of the membrane. Even detergent residues (surfactants) cannot harm the non-porous membrane, so that the garments retain their full performance even with frequent washing. So whether you wash the garments frequently or less frequently - 100% function and optimum breathability are guaranteed.

The right care extends the durability of a product. For information on washing, drying and ironing, dry-cleaning and re-impregnation, please visit www.sympatex.com.

If functional clothing is damaged, it does not need to be thrown away. Cracks and holes can be sealed again with the right materials and the know-how of our "repair partners". Even broken zippers, torn pockets or sleeves that are too long are no problem. In the interests of sustainability, Sympatex would therefore like to introduce its authorised "repair partners".

Germany	Switzerland	France
OUTDOOR SERVICE TEAM	GEGR. 1987 ATELIER KARTAL	Green Wolf Second life Outdoor
www.outdoor-service.com	**www.atelierkartal.ch**	**www.green-wolf.fr**
Outdoor Service Team Am Dorfanger 20 D-16515 Oranienburg	Atelier Kartal Tellistrasse 92 CH-5000 Aarau	21 Rue Joseph Thoret 74190 PASSY Vallée du Mont-Blanc
+49 (0) 30 / 992 720 86 info@outdoor-service.com	+41 (0)62 822 16 15	+33 (0)6 07 04 34 88

9 SOCIAL STANDARDS

Sympatex is amfori BSCI member. Our direct business partners, particularly the small number of ready-to-wear companies, are amfori BSCI (Business Social Compliance Initiative) verified. Furthermore, we are intensively working on integrating the deeper supply chain (Tier 2 and 3, particularly our laminating partners and dyers) into the BSCI Audit process as well.

Amfori BSCI is a leading business-driven initiative for companies that are committed to improving working conditions in factories and agricultural operations around the world. It unites more than 1000 companies around a development-oriented system applicable to all sectors and procurement markets.

All our business partners are committed to the BSCI Code of Conduct. The Code is based on international conventions such as the Universal Declaration of Human Rights, the Guidelines on Children's Rights and Corporate Behaviour, the United Nations Guidelines on Business and Human Rights, the OECD Guidelines, as well as the UN Global Compact and the conventions and recommendations of the International Labour Organization (ILO), which are decisive for improving working conditions in the supply chain.

The BSCI participants commit themselves to implementing and complying with the Code of Conduct and to continuous improvement, cooperation and empowerment (authorization).

The BSCI principles include the right to freedom of association and the right to collective bargaining, the prohibition of discrimination, appropriate remuneration, reasonable working hours, occupational health and safety, the prohibition of child labour and the special protection of young workers, the prohibition of precarious employment and forced labour. The initiative also calls for environmental protection and ethical business practices.

Furthermore, all bluesign® certified laminates are tested for compliance with occupational safety and building security.

10 ENGAGEMENT IN MULTI STAKEHOLDER INITIATIVES

In order to achieve measurable, comparable and transparent progress towards greater sustainability in global textile supply chains, we are active in multi-stakeholder initiatives.

Being a part of MSIs also enables us to establish transparency in our supply chains. To this aim, we work closely with our business partners to gather and expand knowledge about our deeper supply chains. For the detailed calculations of the environmental impact of our products we had to evaluate supply chain data at an early stage.

In 2020, we also plan to publish direct suppliers on our website.

10.1 SUSTAINABLE APPAREL COALITION

Since 2015, Sympatex® is a member of the Sustainable Apparel Coalition (SAC). The SAC gathers more than 150 global brands, retailers and manufacturers, as well as government, non-profit, environmental and academic organizations. Jointly we work together to make sustainable improvements to the supply chain in the apparel and footwear industry.

Sympatex is working with the following SAC modules and their specific Higg Indices, such as the Material Sustainability Index (MSI). Furthermore, we are completing the Brand Retail Module (BRM) on a yearly basis, thus measuring and benchmarking our own sustainability performance to industry peers. We also expect from our suppliers to do the same by completing the Facility Environmental Module (FEM) and the Facility Social and Labor Module (FLSM), rating their environmental and social sustainability.

To make our voice heard on the EU level, Sympatex is active in the EU Policy Task Team and since the beginning of 2020, we are part of a three-year project to develop guidelines for calculating an Environmental Footprint (EF): the EU Product Environmental Footprint Category Rules (EU PEFCRs). Furthermore, we are member of the Consultative Group of the Product Advisory Council (PAC) and involved in numerous pilot phases of the various SAC modules.

10.2 PARTNERSHIP FOR SUSTAINABLE TEXTILES

The Partnership for Sustainable Textiles is a multi-stakeholder initiative with the aim of achieving social, ecological and economic improvements along the entire textile value chain. Sympatex® has been a member of the partnership since May 2015 and is intensively involved in achieving the alliance's goals, for example by participating in working groups and alliance initiatives.

In order to bring about constant improvement in the sustainable textile value chain, each member draws up a roadmap every year. This contains implementation requirements that each member works on for the year in question.

In 2019, the first roadmap was published on the Textile Alliance website. From 2020 onwards, reporting will take place at regular intervals of two years, verified according to OECD guidelines.

Here you can find our current published Sympatex Roadmap.

Sympatex is also involved in various alliance initiatives, including the Expert Group on Man-Made Fibres and in the environmental issues of climate, water and chemical safety, which are currently being coordinated.

10.3 CERTIFIED B CORPORATION

Economic success is not everything. As B-Corp, we meet the highest standards for audited social and environmental performance, public transparency and legal accountability. We are proud to be a member of a global network of companies that have redefined business success for themselves and are focusing on issues such as transparency, environmental protection and social responsibility.

With the B-Corp award "Best for The World Award 2019" in the category "Environment", we are among the 10% of the best B-Corps worldwide. An award that evaluates not only a product or service in a multi-stage audit process, but the entire impact of the company.

11 OVERVIEW OF PERFORMANCE AND ECOLOGY

Performance is an important sustainability factor in terms of durability and clothing comfort. Enclosed, therefore, is an overview of sustainability at a glance.

11.1 TECHNICAL COMPARISON

TECHNICAL COMPARISON	Properties of PES	Properties of PTFE
Properties after washing	Poreless / even greater breathability after 1-2 washing cycles	Microporous / pores may clog due to detergent residue. Adverse effect on membrane properties, especially breathability
Stretchability	> 300%	Approx. 100%
Breathability	Breathability increases during greater physical activity = dynamic climate control	Consistent, not dynamic. No removal of fluid (sweat)
Waterproofness	100% waterproof	Yes, but there is a risk of reduced waterproof-ness due to soiling after wearing, improper care or enlarged pores caused by overstretching the material
Windproofness	100% windproof. 0 litre / (m² x sec.)	Windproof; > 2 litres / (m² x sec.)
Durability	Extremely durable and tough	Durable. Porous structure can change/deteriorate. Pores can be blocked
Barriers	Virus and bacteria proof	Viruses and bacteria can penetrate micropores

11.2 ECOLOGICAL COMPARISON

ECOLOGICAL COMPARISON	Properties of PES	Properties of PTFE
Material	PES based, environmentally friendly	Not eco-friendly, PFCs used in manufacturing process
Recyclability	Can be easily fed into the recycling process in combination with PESs textiles	Not recyclable with any sort of textiles – require incineration or landfill disposal
Carbon footprint	140 kg CO_2 per km; Fully compensated starting 2017	4.2 t CO_2 per km = 30x higher
Water consumption	1.6 m3 per km	2.8 m3 per km = 2.5x higher
End-of-life incineration (esp. open fire)	Combustion products/gases similar to wood	Highly toxic gases, e. g. Teflon flu

12 MEMBERSHIPS AND COMMITMENTS OVERVIEW